Personal Memo from
JOSHUA LEDERBERG

Prof Norman Horowitz
Cal Tech

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Dear Norman

Thanks for sending your very fine memoir on Beets.

I will not continue our debate about the one : one theory; the important thing is the work it inspired!

One small point. You have B.O. Dodge coming from Columbia. Indeed Dodge did his Ph.D there, but he went to USDA in 1920 and the N.Y. Bot. Gardens in 1928. So he did none of his Neurospora work at Columbia.

As a grad. student he had discovered heating of Ascobolus ascospores and used that method later for Neurospora.

My very best personal wishes

Josh

[X] ...

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Beadle — Nobel.

worked out and the homogentisic acid isolated and identified many years before.

Our idea — to reverse the procedure and look for gene mutations that influence known chemical reactions — was an obvious one. It followed logically from the concept that, in general, enzymatically catalyzed reactions are gene-dependent, presumably through genic control of enzyme specificity. Although we were without doubt influenced in arriving at this approach by the anthocyanin investigations, by LWOFF's demonstrations that parasites tend to become specialized nutritionally through loss of ability to synthesize substances that they can obtain readily from their hosts (18), and by the speculations of others as to how genes might act, the concepts on which it was based developed in our minds fairly directly from the eye-color work EPHRUSSI and I had started five years earlier.

The idea was simple: Select an organism like a fungus that has simple nutritional requirements. This will mean it can carry out many reactions by which amino acids and vitamins are made. Induce mutations by radiation or other mutagenic agents. Allow meiosis to take place so as to produce spores that are genetically homogeneous. Grow these on a medium supplemented with an array of vitamins and amino acids. Test them by vegetative transfer to a medium with no supplement. Those that have lost the ability to grow on the minimal medium will have lost the ability to synthesize one or more of the substances present in the supplemented medium. The growth requirements of the deficient strain would then be readily ascertained by a systematic series of tests on partially supplemented media.

In addition to the above specifications, we wanted an organism well suited to genetic studies, preferably one on which the basic genetic work had already been done.

Neurospora.

As a graduate student at Cornell, I had heard Dr. B. O. DODGE of the New York Botanical Garden give a seminar on inheritance in the bread mold Neurospora. So-called second division segregation of mating types and of albinism were a puzzle to him. Several of us who had just been reviewing the evidence for 4-strand crossing over in Drosophila suggested that crossing over between the centromere and the segregating gene could well explain the result.

DODGE was an enthusiastic supporter of Neurospora as an organism for genetic work. "It's even better than Drosophila", he insisted to THOMAS HUNT MORGAN, whose laboratory he often visited. He finally persuaded MORGAN

See also Robbins memoir on Dodge. Vol 36 NAS Biog. Mems.